

BULLETIN

OF THE INSTITUTE OF METALS

VOLUME 4

MARCH 1958

PART 7

INSTITUTE NEWS

**Golden Jubilee Spring Meeting,
London, 29 April–2 May**

REVISED PROGRAMME

Monday, 28 April

Location: Church House, Great Smith Street, Westminster, S.W.1.

All-day. *REGISTRATION* of members and delegates.

Location: Royal Institution, Albemarle Street, W.1.

8.15 p.m. *GOLDEN JUBILEE LECTURE*, by Professor R. S. HUTTON, M.A., D.Sc., Original Member and Fellow, followed by a social function.

Tuesday, 29 April

Location: Church House, Great Smith Street, Westminster, S.W.1. Hoare Memorial Hall.

9.30 a.m. *ANNUAL GENERAL MEETING* of the Institute of Metals.

- (a) Election of Officers.
- (b) Report of Council for the Year Ended 31 December 1957.
- (c) Report of the Honorary Treasurer for the fourteen months ended 31 August 1957.
- (d) Induction of New President, Marshal of the Royal Air Force The Right Hon. The Lord TEDDER, G.C.B., D.C.L., LL.D.
- (e) Vote of Thanks to Retiring President.
- (f) Speech of Congratulations to the Institute on Behalf of Allied Societies.
- (g) Presentation of Institute Medals.

Location: Convocation Hall and Bishop Partridge Hall.

12 noon *COCKTAIL PARTY*.

Location: Hoare Memorial Hall.

3.0 p.m. *MAY LECTURE*, by Professor A. G. QUARRELL, D.Sc., Ph.D., A.R.C.S., D.I.C. (Professor of Metallurgy, The University of Sheffield) on "Fifty Years of Metallurgical Science", followed by a discussion.

Location: Fishmongers' Hall, London, E.C.4.

7.30 p.m. *RECEPTION* in the Livery Hall of the Worshipful Company of Fishmongers (evening dress).

Wednesday, 30 April

Location: Church House, Great Smith Street, Westminster, S.W.1.

Morning

PROGRAMME "A"

(Hoare Memorial Hall)

10.0 a.m. *Theme: Age-Hardening and Related Phenomena.* A discussion, based on the following papers published in the *Journal*, which will be introduced by a Rapporteur:

(a) ENTWISTLE: "The Damping Behaviour of Quenched Aluminium-Copper-Magnesium-Silicon Alloys" (No. 1769; June 1957).

(b) THOMAS and NUTTING: "The Plastic Deformation of Aged Aluminium Alloys" (No. 1788; Sept. 1957).

(c) CHITTY: "The Effect of Silicon, Manganese, and Iron on the Ageing Characteristics of Aluminium-Copper Alloys Containing 3.0 and 4.5 Per Cent. Copper" (No. 1797; Oct. 1957).

(d) BETON and ROLLASON: "Hardness Reversion of Dilute Aluminium-Copper and Aluminium-Copper-Magnesium Alloys" (No. 1798; Oct. 1957).

(e) BETON and ROLLASON: "Hardness Reversion of Aluminium-Silver Alloys" (No. 1799; Oct. 1957).

(f) HOOKER: "An Investigation into Some Ageing Characteristics of Lead-Antimony Alloys, with Particular Reference to the Effect of Strain" (No. 1802; Oct. 1957).

(g) POLMEAR: "The Ageing Characteristics of Ternary Aluminium-Zinc-Magnesium Alloys" (No. 1804; Nov. 1957).

(h) CLARK and STURKEY: "The Age-Hardening Mechanism of Magnesium-Lithium-Zinc Alloys" (No. 1830; Feb. 1958).

(i) KODA and TAKEYAMA: "Interaction Between Slip Bands and Particles of Precipitate in an Aluminium Alloy" (No. 1831; Feb. 1958).

PROGRAMME "B"

(Convocation Hall)

10.0 a.m. *Theme: Refining of Copper and Copper Alloys.* A discussion, based on the following papers published in the *Journal*, which will be introduced by a Rapporteur:

(a) TOLMIE and ROBINS: "The Zone-Refining of Impure Copper" (No. 1738; Jan. 1957).

(b) MICHAEL, RUDDLE, and CIBULA: "Equilibrium Conditions in the Copper-Oxygen-Cadmium-Phosphorus System" (No. 1780; Aug. 1957).

(c) STOLARCZYK, CIBULA, GREGORY, and RUDDLE: "The Removal of Lead from Copper in Fire Refining" (No. 1795; Oct. 1957).

(d) STOLARCZYK and RUDDLE: "The Removal of Lead and Tin from Copper in Fire Refining" (No. 1796; Oct. 1957).

Afternoon

PROGRAMME "A"

(Hoare Memorial Hall)

2.30 p.m. Discussion of the following papers published in the *Journal*:

(1) THORLEY and TUCKER: "The Control of Earing in Aluminium and Its Alloys" (to be published in April).

(2) Jointly:

VARLEY, DAY, and SENDOREK: "The Structure and Mechanical Properties of High-Purity Aluminium-Zinc-Magnesium Alloys" (to be published in April).

COLLINS: "Constitutional Factors Affecting the Tensile Properties of Wrought Aluminium-Magnesium-Silicon-Copper Alloys" (No. 1838; March 1958).

PROGRAMME "B"

(Convocation Hall)

2.30 p.m. A.—*Theme: Chromium*. A discussion, based on the following papers published in the *Journal*, which will be introduced by a Rapporteur.

(a) POWELL and TYE: "The Influence of Heat-Treatment on the Electrical Resistivity and the Thermal Conductivity of Electrodeposited Chromium" (No. 1740; Jan. 1957).

(b) WAIN, HENDERSON, JOHNSTONE, and LOUAT: "Further Observations on the Ductility of Chromium" (No. 1832; Feb. 1958).

(c) PURSEY: "A New Investigation of Anomalies in Chromium" (to be published in April).

B.—*Theme: Nickel*. A discussion, based on the following papers published in the *Journal*, which will be introduced by a Rapporteur:

(a) FELTHAM: "Grain Growth in Metals, with Special Reference to High-Purity Nickel" (No. 1801; Oct. 1957).

(b) BETTERIDGE: "The Extrapolation of the Stress-Rupture Properties of the Nimonic Alloys" (No. 1824; Jan. 1958).

(c) FELTHAM: "Intergranular Substructures in High-Purity Nickel" (No. 1825; Jan. 1958).

Evening

Location: Army and Navy Club, Pall Mall, S.W.1.

7.30 for COUNCIL DINNER for distinguished guests (day dress).
8.0 p.m.

Thursday, 1 May

Location: Church House, Great Smith Street, Westminster, S.W.1.

Morning

PROGRAMME "A"

(Hoare Memorial Hall)

9.30 a.m. SYMPOSIUM on "Advances in Inspection Techniques as Aids to Process Control in Non-Ferrous Metals Production", arranged by the Metallurgical Engineering Committee. A discussion, based on the following papers published in the *Journal*, to be introduced by a Rapporteur (Mr. W. C. F. Hessenberg, M.A., F.I.M.):

PART I

(a) SIMS: "Automatic Gauge Control in Rolling Mills" (No. 1833; March 1958).

(b) BELL: "The Accuracy of Strip Thickness Measurements by Beta and Gamma Absorption" (No. 1834; March 1958).

(c) CARLISLE and WILSON: "Measurement, Inspection, and Automatic Process Control in the Steel Strip Finishing and Tinplate Industry" (No. 1835; March 1958).

PROGRAMME "B"

(Convocation Hall)

10.0 a.m. INFORMAL DISCUSSION on "The Life of Fuel Elements", arranged by the Nuclear Energy Committee.

Afternoon

PROGRAMME "A"

(Hoare Memorial Hall)

2.30 p.m. SYMPOSIUM on "Advances in Inspection Techniques as Aids to Process Control in Non-Ferrous Metals Production" (continued). A discussion, based on the following papers in the *Journal*, to be introduced by a Rapporteur (Dr. W. A. Baker, F.I.M.):

PART II

(d) HARRIS and CROWTHER: "The Use of Ultrasonic Testing for the Control of Quality in the Manufacture of Aluminium Alloys and Other Non-Ferrous Materials" (No. 1818; Jan. 1958).

(e) CLAYDON: "Instrumentation in Ultrasonic Flaw Detection" (No. 1826; Feb. 1958).

(f) MILBOURN and GIDLEY: "Control Analysis of Aluminium Alloys Using Self-Recording Spectrometers" (No. 1821; Jan. 1958).

(g) RANSLEY, TALBOT, and BARLOW: "An Instrument for Measuring the Gas Content of Aluminium Alloys During Melting and Casting" (No. 1820; Jan. 1958).

(h) ROBINSON and PERRIAM: "Inspection of Tubes for Flaws and Variations in Thickness" (No. 1836; March 1958).

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(i) HARVEY: "Use of a Search-Coil Apparatus for Eddy-Current Testing of Copper and Its Alloys" (No. 1827; Feb. 1958).

(j) HALMSHAW: "Recent Advances in Radiographic Techniques" (No. 1819; Jan. 1958).

PROGRAMME "B"

(Convocation Hall)

2.30 p.m. SYMPOSIUM on "Plutonium and Techniques for Handling It", arranged by the Nuclear Energy Committee. A discussion, based on the following papers published in the *Journal*, to be introduced by a Rapporteur (Professor J. G. BALL, B.Sc., F.I.M.):

(a) BALL and LORD: "A History of the Early British Work on Plutonium Metallurgy" (to be published in April).

(b) WILLIAMSON, POOLE, and MARPLES: "Some Facilities for the Study of Plutonium and Its Alloys" (No. 1770; June 1957).

(c) LORD and WALDRON: "The Development of Handling Techniques for the Study of Plutonium Metal" (to be published in April).

(d) MARDON, HAINES, PEARCE, and WALDRON: "The Plutonium-Iron System" (No. 1812; Dec. 1957).

(e) POOLE, WILLIAMSON, and MARPLES: "A Preliminary Investigation of the Plutonium-Thorium System" (No. 1813; Dec. 1957).

(f) DEMPSEY and KAY: "Some Investigations on Plutonium Metal" (to be published in April).

Evening

Location: Great Room, Grosvenor House, Park Lane, W.1.

7.15 p.m. GOLDEN JUBILEE BANQUET. Principal for Guest: Lord Hailsham (Lord President of the

7.45 p.m. Council) (Evening dress, with decorations).

Friday, 2 May

ALL-DAY VISITS

No.

- 1 Blenheim Palace, Woodstock, with lunch at Weston Manor Hotel, Weston-on-the-Green, Oxon.
- 2 A.P.V. Company, Ltd., Crawley, and Telephone Construction and Maintenance Co., Ltd., Crawley.
- 3 W. H. Allen, Sons, and Co., Ltd., Bedford, and W. H. A. Robertson and Co., Ltd., Bedford.
- 4 British Aluminium Co., Ltd., Research Laboratories, Gerrards Cross, Bucks.
- 5 Enfield Rolling Mills, Ltd., Brimsdown, Middlesex.
- 6 General Electric Co., Ltd., Research Laboratories, Wembley.
- 7 G. A. Harvey and Co. (London), Ltd., London, S.E.7, and J. Stone and Co. (Charlton), Ltd., London, S.E.7.
- 8 High Duty Alloys, Ltd., Slough, and Langley Alloys, Ltd., Slough.
- 9 Northern Aluminium Co., Ltd., Banbury, and Aluminium Laboratories Limited, Banbury.

- 10 Morris Radiators, Ltd., Cowley, Oxford; and Pressed Steel Co., Ltd., Cowley, Oxford.
- 11 Vickers-Armstrongs (Aircraft), Ltd., Weybridge.

LADIES' VISITS

Certain additional visits are being arranged for ladies.

Election of Members

The following 5 Ordinary Members, 1 Junior Member, and 6 Student Members were elected on 5 February 1958:

As Ordinary Members

- ANG, Choh-Yi, Ph.D., M.S., Met.E., E.M., Research Station Head, Metallurgical Divisions, P. R. Mallory and Co., 3029 E. Washington St., Indianapolis, Ind., U.S.A.
- BAUSER, Martin, Dipl.-Phys., Dr.rer.nat., Wissenschaftlicher Mitarbeiter, Wieland-Werke A.G., Olgastrasse 147, Ulm (Donau), Germany.
- MANSFORD, Ralph Ernest Alfred, A.I.M., Chief Chemist, Metallisation, Ltd., Pear Tree Lane, Dudley, Worcs.
- TUMMERS, Guillaume Emmanuel, Bibliotheek Staatsmijnen in Limburg, Centraal Laboratorium, Postbus 18, Geleen, Netherlands.
- ZOJA, Professore Raffaello, Dr.Ing., Direttore del Centro Studie Controlli, Società Nazionale "Cogne" S.A., Aosta, Italy.

As Junior Member

- CONNOLLY, David Edwin, Assistant Experimental Officer, U.K. Atomic Energy Authority, Springfield, Salwick, near Preston, Lancs.

As Student Members

- DALAL, Santosh Kumar, Undergraduate, University College of South Wales and Monmouthshire, Cardiff.
- GIBBONS, James Barry, Undergraduate, Department of Metallurgy, University of Cambridge.
- HILL, Thomas Bryan, Undergraduate, Royal School of Mines, London, S.W.7.
- KNIGHT, John, A.Met., L.I.M., Research Student, Department of Metallurgy, University of Sheffield.
- MORRIS, Charles Ivor, Technical Assistant, South Wales Aluminium Co., Resolven, Neath, Glam.
- MYERS, Edward James, B.S., M.S.E., Graduate Student, Chemical and Metallurgical Engineering, University of Michigan, Ann Arbor, Mich., U.S.A.

Binding of Institute Publications

Mr. W. A. Newark, 2 Clerkenwell Green, London, E.C.1., announces that in future his prices for binding Institute publications will be:

<i>Bulletin</i>	13s. 9d.
<i>Journal</i>	14s. 6d.
<i>Metallurgical Abstracts</i>	14s. 6d.
<i>Metallurgical Reviews</i>	11s. 0d.

These prices include return postage to Members in the United Kingdom.

Mr. Newark regrets he is unable to accept binding orders from outside the United Kingdom.

PERSONAL NOTES

MR. C. E. ABBOTT has left Cambridge University and is now with Ferranti, Ltd., Manchester.

MR. M. S. ABRAHAMS has left Columbia University and is now at the David Sarnoff Research Center, Radio Corporation of America, Princeton, N.J.

MR. P. AUSTIN has left the Bristol Aeroplane Co., Ltd., to become Metallurgist at the Monk Bridge Iron and Steel Co., Ltd., Leeds.

MR. N. BEACH has left the Hoffman Manufacturing Co., Ltd., Chelmsford, and is now with Blaw-Knox, Ltd., Rochester.

DR. M. B. BEVER has been appointed Professor of Metallurgy at the Massachusetts Institute of Technology.

MR. D. C. BROWN has left C. A. Parsons and Co., Ltd., to rejoin Rotol, Ltd., Gloucester.

MR. A. CHAMBERLAIN has relinquished his position as Secretary and Research Officer of the Admiralty-Vickers Gearing Research Association, Barrow-in-Furness, to take up an appointment as an Engineer I with the U.K. Atomic Energy Commission, Industrial Group, Risley.

MR. D. L. COLWELL of the Apex Smelting Co., Cleveland, has been appointed Chairman of the newly formed Die-Casting and Permanent-Mould Division of the American Foundrymen's Society.

MR. G. E. DARWIN has left Metropolitan-Vickers Electrical Co., Ltd., and joined the Atomic Energy Department of Babcock and Wilcox, Ltd.

MR. M. F. DOWDING has been appointed Chief Engineer to Davy and United Engineering Co., Ltd., in succession to the late Mr. W. W. Franklin.

MR. H. H. EGGINTON has been appointed Works Manager of Teddington Refrigeration Controls, Ltd., Sunbury-on-Thames.

MR. L. FAIRMAN has left King's College, Newcastle-upon-Tyne, and is now on the staff of the Atomic Weapons Research Establishment, Aldermaston, Berks.

MR. P. M. GEORGE has left Cambridge University and has taken up a post in the Research Department, Imperial Chemical Industries, Ltd., Metals Division, Birmingham.

MR. K. M. GINSBURG has taken up an appointment with British Insulated Callender's Cables, Ltd., London, W.12.

MR. H. B. HEATON has taken up a post in the Physical Metallurgy Department of Metropolitan-Vickers Electrical Co., Ltd., Manchester.

MR. F. R. JACKSON has been appointed Chief Metallurgist, Kaiser Aluminum and Chemical Corp., Newark, O.

MR. J. A. KETCHUM has been appointed Technical Superintendent of the Kaiser Aluminum and Chemical Corp., Newark, O.

MR. S. E. MILLS has left the Bifurcated and Tubular Rivet Co., Ltd., to join I.D.M. Electronics, Ltd., Reading.

MR. C. A. PARLANTI has received the degrees of D.Sc. and Ph.D. from the University of Bari, Italy.

MR. W. M. PEARCE has been appointed Assistant to the Executive Vice-President of the New Jersey Zinc Co., Ltd.

MR. L. ROTHERHAM has been appointed a full-time member of the Central Electricity Generating Board with effect from 1 April. He was previously Director of Research and Development at the Industrial Group Headquarters of the U.K. Atomic Energy Authority, Risley.

MR. A. M. SAGE has left the British Iron and Steel Research Association and is now with Union Carbide, Ltd., London.

MR. C. C. SMITH has left Manchester University and is now with the Atomic Power Division of English Electric Co., Ltd.,

MR. A. B. STECK has been appointed Consultant to Metallurgical Associates, Inc., New York.

MR. R. A. STORER has left the Rover Car Co., Ltd., and is now with Joseph Lucas (Aust.) Pty., Melbourne, Australia.

MR. P. THORNTON has resigned his post as Lecturer in Metallurgy at Battersea College of Technology to take a similar appointment at the College of Technology, Bristol.

Deaths

The Editor regrets to announce the death of:

DR. RICHARD HENRY GREAVES on 20 January, in his 72nd year. He was formerly Director of Metallurgical Research at Woolwich Arsenal and was part author of the well-known book "Practical Microscopical Metallography".

MRS. MARY CARMEL MOORE, wife of the Assistant Secretary, on 15 January, after a short illness.

OBITUARY

Mr. A. McLeod

Mr. Alastair McLeod, head of the metallurgical editorial staff of Industrial Newspapers, Ltd., died in London on 3 January 1958, aged 58. Mr. McLeod received his metallurgical training in Scotland, and was for many years with Frederick Braby and Co., Ltd., Glasgow, and other Scottish rollers of sheet steel before moving to London to take up the editorship of *Sheet Metal Industries*. At the time of his death he was managing editor of *Sheet Metal Industries*, *Metal Finishing Journal*, and *Metal Treatment and Drop Forging*, and chief metallurgical editor of the *Iron and Coal Trades Review*.

Mr. McLeod travelled extensively in the course of his work, and was well known and esteemed in metallurgical circles throughout the United Kingdom and on the Continent of Europe.

He was a Fellow of the Institution of Metallurgists and an Hon. Vice-President of the Institute of Sheet Metal Engineering, which he was largely instrumental in founding. He was in addition a member of the Iron and Steel Institute, the Institute of Metals, the Institute of Welding, the Institute of British Foundrymen, the Institution of Production Engineers, the Refractories Association of Great Britain, and of the American Association of Iron and Steel Engineers and the Electrochemical Society, New York.

DIARY

The Institute

- 19 March. Powder Metallurgy Joint Group.** Informal Discussion (all day) on "Developments in the Practice of Compacting and Sintering", at Church House, Great Smith Street, London, S.W.1, at 10.0 a.m.

Local Sections and Associated Societies

- 17 March. Sheffield Local Section.** "The Engineering Aspects of the Design of Nuclear Reactors", by E. P. Hotchen. (Engineering Lecture Theatre, University Buildings, St. George's Square, Sheffield 1, at 7.30 p.m.)
- 18 March. South Wales Local Section.** Annual General Meeting, followed by short papers from members of the Section. (Department of Metallurgy, University College, Singleton Park, Swansea, at 6.30 p.m.)
- 19 March. Liverpool Metallurgical Society.** Visit to the Yorkshire Copper Works, Ltd., Leeds.
- 20 March. Birmingham Local Section.** Annual General Meeting and Chairman's Address. (College of Technology, Gosta Green, Birmingham, at 6.30 p.m.)
- 20 March. Southampton Metallurgical Society.** "Stress Corrosion", by K. Wilson. (Southampton University, at 7.15 p.m.)
- 26 March. Manchester Metallurgical Society.** "Some Metallurgical Aspects of Nuclear Power Development", by Dr. H. K. Hardy. (Manchester Room of the Central Library, Manchester, at 6.30 p.m.)
- 1 April. Oxford Local Section.** Annual General Meeting and At Home at The Department of Metallurgy, University Museum, Parks Road, Oxford, at 7 p.m.
- 3 April. London Local Section.** Annual General Meeting, followed by "New Protective Coatings for Metals", by W. E. Ballard. (17 Belgrave Square, London, S.W.1, at 6.30 p.m.)
- 7 April. Scottish Local Section.** Works Visit.
- 10 April. East Midlands Metallurgical Society.** Annual General Meeting, followed by "Continuous Rolling of Stainless-Steel Strip", by J. A. Campbell. (Nottingham and District Technical College, Shakespeare Street, Nottingham, at 7.30 p.m.)
- 10 April. Leeds Metallurgical Society.** "Pressure Die-Casting", by G. Kelly. (This meeting will be held at the West Yorkshire Foundries, Ltd., Leeds.)
- 10 April. Liverpool Metallurgical Society.** "The Micromechanism of Fracture in Mild Steels", by Professor W. S. Owen, followed by the Annual General Meeting. (Liverpool Engineering Society, 9 The Temple, Dale Street, Liverpool, at 7.0 p.m.)

APPOINTMENTS VACANT

ALUMINIUM LABORATORIES LIMITED

INVESTIGATOR (Graduate or equivalent), aged about 30 years, required to specialize on problems in applied physics in the aluminium fabricating industry. The post is a responsible one in which ability to work on own initiative is essential; some industrial experience preferred. In the first instance the successful applicant would be concerned with thermal transfer problems, but the work of the Laboratory also includes fundamental investigation chosen to provide information for the development of methods for controlling works processes and for the inspection and testing of materials. Pension and Life Assurance Scheme in operation. Apply to: Personnel Officer, Aluminium Laboratories Limited, Banbury, Oxon.

ALUMINIUM LABORATORIES LIMITED

require

INVESTIGATOR to join a team engaged on research into the corrosion behaviour of aluminium and its alloys. The work would cover a variety of problems including stress corrosion; a particular interest is desirable in the electrochemical aspects of corrosion. A man with either a metallurgical or a chemical training (Graduate, A.I.M., or A.R.I.C.) and with some practical experience would be suitable. Age 25 to 30.

METALLURGIST to carry out research in connection with plant problems. (Graduate, L.I.M., or A.I.M. qualifications preferred but not essential). He would be a member of a group working on various aspects of the fabrication and use of aluminium alloys. There would be considerable scope for initiative and originality. Age 30 or under. Pension and Life Assurance Scheme in operation. Apply to: Personnel Officer, Aluminium Laboratories Limited, Banbury, Oxon.

An international industrial firm require
a qualified

DEPUTY RESEARCH MANAGER

with chemical or metallurgical research experience, not over 45 years of age. Substantial four-figure salary with car provided. For further information, please contact the Technical Advisory Service, Birmingham Productivity Association, 95 New Street, Birmingham. (MID 0912.)

COLLEGE OF TECHNOLOGY, BIRMINGHAM

(Designated College of Advanced Technology)

Applications are invited for the post of SENIOR LECTURER IN METALLURGY.

The salary scale is (Men) £1350-£1550. Special attention is drawn to the fact that a candidate may be granted additional increments above the minimum up to the maximum of the scale (e.g. £1550) in accordance with his industrial, professional, or research experience approved by the Governors as of equivalent standard.

Further particulars and form of application may be obtained from the Registrar, College of Technology, Suffolk Street, Birmingham 1. Applications to be received within 18 days of this advertisement.

K. R. PILLING, Clerk to the Governing Body.

ENGLISH ELECTRIC

Whetstone, Nr. Leicester.

YOUNG MEN who would like to obtain interesting work as laboratory assistants are invited to apply for positions in our

ATOMIC POWER METALLURGICAL
LABORATORIES

There are vacancies for men who have obtained O.N.C. in metallurgy and also for those who have no formal metallurgical qualifications, but some experience of laboratory work.

Please write, giving details to Dept. C.P.S. Marconi House, 336/7 Strand, London, W.C.2. quoting reference MJ 1814E.

THE GENERAL ELECTRIC COMPANY LIMITED
ATOMIC ENERGY DIVISION

FUEL ELEMENTS FOR NUCLEAR REACTORS

Applications are invited for posts in the Materials Laboratory of the G.E.C. Atomic Energy Division for work on the design and testing of fuel elements for gas-cooled nuclear reactors. Applicants should be of degree standard and have completed or be exempt from National Service. A metallurgical or engineering background is desirable. Apply in writing, giving details of age, qualifications, and experience, to the Personnel Manager, The General Electric Co., Ltd., Erith, Kent, quoting ML/15.

MECHANICAL ENGINEERING RESEARCH LABORATORY (D.S.I.R.), Plasticity Division, East Kilbride, require Physical Metallurgist or Physicist as Senior Scientific/Scientific Officer for research into wide field of metal physics through properties of

APPOINTMENTS VACANT

materials and investigation of formation and cutting processes such as extrusion and machining. Quals. 1st or 2nd Class Hons., but candidate without degree considered if training and experience suitable. Salary: S.S.O. £1130-£1330, S.O. £595-£1050. Slightly less for women subject to Equal Pay Scheme. 42 hours. 5-day week. East Kilbride is a new town with good housing prospects. Forms from M.L.N.S., Technical and Scientific Register (K), 26 King Street, London, S.W.1, quoting F.104/8A. Closing date 24 March, 1958.

METALLOGRAPHER is required in the G.E.C. Atomic Energy Division for work on a wide range of metals, including steels, uranium, and beryllium. Previous metallographic experience essential. Applicants must have completed or be exempt from National Service. Apply in writing, giving details of age, qualifications, and experience, to the Personnel Manager, The General Electric Co., Ltd., Erith, Kent, quoting reference ML/14.

METALLURGISTS of degree standard are invited to apply for posts in the Materials Department of the G.E.C. Atomic Energy Division for work on the physical metallurgy of beryllium and uranium. Applicants should preferably have an interest in deformation, creep, or fracture processes. Apply in writing, giving details of age, qualifications, experience, and National Service commitments, to the Personnel Manager, The General Electric Co., Ltd., Erith, Kent, quoting reference ML/13.

METALLURGICAL RESEARCH

THE MOND NICKEL CO. LTD., is further expanding the section engaged in Melting and Casting research at its Laboratory in Birmingham. Suitably qualified metallurgists are required to conduct investigations in the following fields:

- (i) Study of conventional and novel melting procedures to secure improved control over chemical compositions and mechanical and working properties.
- (ii) Development of new alloys having good castability, corrosion resistance, and mechanical properties.

Successful candidates will join a well-equipped research team which both serves and enjoys the services of other teams studying all aspects of ferrous and non-ferrous alloys.

The vacancies are suitable both for new graduates and for metallurgists having research or production experience. Students sitting for degree examinations in 1958 will be considered. Individual publication of results is encouraged. Salary will be in accordance with experience and qualifications.

Pension and Assurance schemes are in operation, and in appropriate cases assistance can be given for housing. Applications, which will be treated in confidence, should give details of age, qualifications, and experience, and be addressed to The Manager, Development and Research Department, The Mond Nickel Co., Ltd., Thames House, London, S.W.1. Please mark envelope "Confidential L.52".

METALLURGISTS required in the Shepherds Bush laboratories of British Insulated Callender's Cables, Ltd., for Research and Technical service duties on a wide variety of problems dealing with both ferrous and non-ferrous metals of interest in the manufacture of electric cables, allied equipment, and transmission structures. Opportunities are available for gaining experience of industrial processes. Applicants should be well qualified and preferably have had some previous experience. Five-day week. Pension Fund. Applications, giving details of age, qualifications, and experience, should be made to Personnel Officer, 38 Wood Lane, London, W.12.

MINISTRY OF SUPPLY require an **ENGINEERING TECHNICIAN** at Harefield, Middlesex, to assist in the metallographic investigations of defects and failures. Quals.: Possession of O.N.C., appropriate City and Guilds Final Certificates, or equiv. qual. is desirable. Should have had suitable training followed by several years' experience in a metallurgical laboratory and in the metallography of either high-quality steels or aluminium alloys. Salary: £870 (at age 30)-£1030 p.a. Application Forms from Ministry of Labour and National Service, Professional & Executive Register, Atlantic House, Farringdon Street, London, E.C.4. (Quote VI/PE. 3081.)

PROFESSORIAL CHAIR—Metallurgy or Physics of Metals—No administrative assignments—Eastern United States. Starting salary \$15,000 per year. September 1958 appointment. Recommendations as well as applications solicited. Box No. 430, The Institute of Metals, 17, Belgrave Square, London, S.W.1.

SENIOR METALLURGIST

required of A.I.M. or Honours Graduate standard, age 28-35, for senior position in large engineering Works. Experience in light alloy fabrication and general knowledge of ferrous metallurgy required.

Should have an aptitude for general works' problems and failure-investigation problems. Salary according to experience and qualifications. Location N.E. Lancs.

Please write to Box JM 4004 LPE, Romano House, 399/401 Strand, London, W.C.2.

SOUTH AFRICAN COUNCIL FOR SCIENTIFIC AND INDUSTRIAL RESEARCH

NATIONAL MECHANICAL ENGINEERING RESEARCH INSTITUTE

FOUNDRY SANDS FELLOWSHIP

Applications are invited from graduates in Science or Engineering for the above Fellowship established with the South African Council for Scientific and Industrial Research by the Institute of British Foundrymen, South African Branch.

Minimum qualifications required, B.Sc. or B.Sc.(Eng.) or equivalent. Foundry experience desirable though not essential.

Appointment will be for a period of three years in the first instance; basis initial salary will be according to qualifications and experience, in the range £510 to £1380 per annum plus cost-of-living allowance of £234 per annum in the case of married male officers.

Applications stating age, marital status, qualifications, and experience should reach the Acting Director, National Mechanical Engineering Research Institute, P.O. Box 395, Pretoria, before Monday, 31 March 1958.

STEEL RESEARCH

THE MOND NICKEL COMPANY, LTD., is expanding the activities of its Steel Research Section in the Laboratory at Birmingham. Metallurgists possessing a good honours degree, or its equivalent, are required. The vacancies are suitable both for men with research experience, able to control a variety of investigations, and for new graduates. Publication of results is encouraged.

Salary will be in accordance with experience and qualifications. Pension and assurance schemes are in operation and, in appropriate cases, assistance can be given for housing. Applications, which will be treated in confidence, should give details of age, qualifications, and experience and be addressed to The Manager, Development and Research Department, The Mond Nickel Co., Ltd., Thames House, Millbank, London, S.W.1. Please mark envelope "Confidential L.53".

UNIVERSITY OF NOTTINGHAM

I.C.I. RESEARCH FELLOWSHIPS

Applications are invited for Imperial Chemical Industries Research Fellowships in Chemistry (including Agricultural Chemistry), Physics, Pharmacy, Engineering, Metallurgy, and related subjects, tenable at the University of Nottingham. A number of appointments may be made as from 1 October 1958, with a normal tenure of three years. The salary will be within the scale £800-£1000 per annum, depending on qualifications and experience. Fellows will have status as members of the academic staff and will be eligible for F.S.S.U. benefits and children's allowances.

Further particulars and forms of application may be obtained from the Registrar, to whom applications must be returned not later than 31 March 1958.